

Visitor Guidelines for the Antarctic

German Environment Agency

**Umwelt
Bundesamt**





Antarctic
Implementation AIEP

Imprint

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Dear Travellers!

You are going to visit the Antarctic for private or professional reasons? You are about to discover for the first time or to revisit the “White Continent”? To support your safe and sustainable stay in the Antarctic we elaborated these guidelines for you.

The extreme Antarctic landscape and climate are fascinating and motivating increasing numbers of visitors. Many consider a journey to this region one of the “great challenges”. Despite this fascination, visitors need to keep in mind that Antarctica is in no way comparable to other tourist destinations of the world. Particularly in case of emergencies, you need to rely mainly on yourself as external rescue options are very limited.

To preserve the Antarctic’s pristine conditions for the future, internationally coordinated guidelines are in place for visitors to the Antarctic. On the following pages, we aim to familiarise you with these regulations.

Please keep these guidelines in mind during your stay. In doing so, you can personally contribute to both the protection of the Antarctic and your own safety.

The German Environment Agency wishes you a safe and successful journey!



1 What makes the Antarctic so unique?

Antarctica is a continent of extremes with unique climate and weather conditions. The continental mainland – covering more than 13 million square kilometres – is mostly ice-covered. Only about 2 percent of the area, i.e. narrow littorals predominantly in West Antarctica and some inland elevations are ice-free. Not only significant distances to the next greater land masses of Patagonia, New Zealand and South Africa but also the isolation of Antarctica due to the Antarctic Circumpolar Current contribute to its separation from other ecosystems.

In the ice-free dry valleys annual precipitation is lower than in the Sahara. Due to its combination of extremely low temperatures and extreme aridity, the Antarctic ranks among the most hostile environments on earth. At the same time, the cold-related absence of evaporation makes it the greatest freshwater reservoir on earth – holding roughly 90 percent of global ice and 75 percent of global freshwater.

The inland annual average temperature reaches -55°C . The Russian station Vostok in East Antarctica has registered the lowest temperature ever measured under open skies: -89.2°C . Along the Antarctic coastline, the temperature exchange between ocean and atmosphere is effecting much milder temperatures. During summer, average temperatures on the Antarctic Peninsula range around freezing point.

At the South Pole (90°S), dark polar nights prevail throughout the days between March and September, while for the rest of the year the sun hardly sets down. Polar day and night as well as the short summer period between November and February influence fauna and flora. Plants and animals of the Antarctic are adapted to its extreme living conditions. Mosses, algae, and lichens dominate the Antarctic vegetation and many are to be found only there. Merely two flowering plants are native to Antarctica: the Antarctic hair grass and the Antarctic pearlwort.

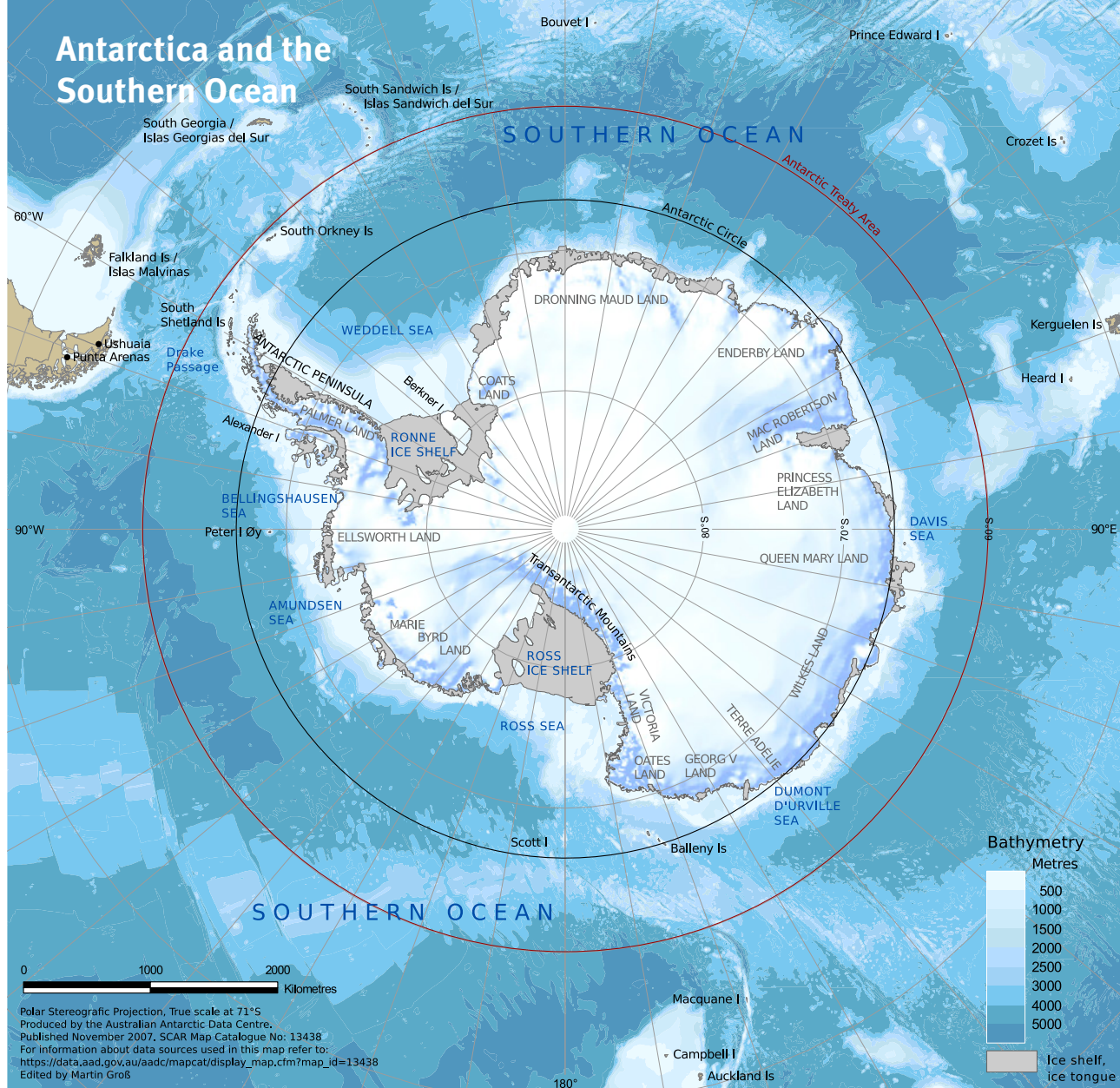


Similar to Antarctic plants, the majority of Antarctic wildlife is to be found on the narrow, ice-free coastline – for example on the Antarctic Peninsula. The largest purely terrestrial animal endemic to Antarctica is a small midge. Much more prominent denizens of the continent, such as seals or penguins, only intermittently live on-shore. Their nutritional basis is krill, a small euphausiid which forms large swarms. As food for numerous organisms, krill holds a key role in the food web of the Antarctic Ocean.

In contrast to all other continents, Antarctica has no indigenous human population. Roughly 4,000 people occupy 80 research stations during summertime; during wintertime, the station personnel is reduced to roughly 1,000. About half of the research stations are maintained on a year-round basis.



The leopard seal is the only Antarctic seal species actively hunting other seals. Although leopard seals may reach four metres in length, they live on krill up to 50 percent. Similar to the crabeater seal, they filter the krill through their molar teeth.



The Antarctic Treaty area encompasses the continent Antarctica and the surrounding Southern Ocean up to 60 degrees southern latitude (red line).

2 How is the Antarctic being protected?

The Antarctic Treaty

In 1959, twelve countries signed the Antarctic Treaty in Washington D.C. The treaty declares Antarctica to be a place of peace, international cooperation and scientific research. For the first time, the treaty bind- ingly regulates the requirements concerning human activities for an entire continent; it defers territorial claims asserted to this point of time¹.

53 countries have signed the Antarctic Treaty to date. Among these, 29 countries have the status of a Consultative Party owing to extensive research activities. This entitles them to participate in shaping international regulations.

The Federal Republic of Germany acceded to the Antarctic Treaty in 1979 and became a Consultative Party in 1981. Accordingly, Germany is bound by the treaty and to all decisions taken at the annual meetings of Consultative Parties to the Antarctic Treaty (Antarctic Treaty Consultative Meeting, ATCM).

Other key agreements in regard to the Antarctic include the Convention for the Conservation of Antarctic Seals (CCAS) enacted in 1972 and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) adopted in 1980.

¹ Argentina, Australia, Chile, France, Great Britain, New Zealand, and Norway are claiming Antarctic territory.

The ATCM is the key platform for political decisions. It decides about measures for the protection of the Antarctic and recommends them to the respective Consultative Party governments for implementation. Representatives of logistic operators in the Antarctic, of the tourism industry and of environmental organisations are admitted to participate in these meetings and have advisory capacity.

The Environmental Protocol

Based on the Protocol on Environmental Protection to the Antarctic Treaty (EP), signed in 1991, the Contracting Parties agreed on a comprehensive protection of the Antarctic environment in order to preserve its uniqueness and pristine conditions. The EP prohibits any kind of commercial exploitation of natural resources and regulates the assessment of the environmental impact of research, tourist and all other activities in the Antarctic.

Germany implemented the EP into national legislation in 1994 (Act Implementing the Protocol of Environmental Protection to the Antarctic Treaty – AIEP). It entered into force in 1998 at the same time as the EP.

The Antarctic Treaty system is one of the most successful international legal regimes. For this vast region of the world – nearly one and a half times the size of Europe delimited by the Urals in terms of continental size – and despite an unresolved and thus “frozen” territorial conflict, it has ensured peace for more than 50 years in Antarctica. It has facilitated close cooperation in scientific research and environmental protection between countries despite diverging interests.

What is the task of the German Environment Agency?

Pursuant to the AIEP, the German Environment Agency (Umweltbundesamt (UBA)) is the competent authority for all activities in the Antarctic that are organised in Germany or proceed from its territory. Thus, tourist operators, journalists and researchers are committed to submit an application to the German Environment Agency for a planned trip to the Antarctic. This also applies to any self-organised sojourns – e.g. a trip with a sailing or motor yacht.

Only five out of eighteen world's penguin species breed in the Antarctic Treaty area. One of them is the Adélie penguin. This species also benefits from the strict regulations of the AIEP.



Those responsible for an expedition are obliged to both inform their fellow travellers on environmentally sound behaviour and ensure compliance with visitor guidelines. To enable the

German Environment Agency to verify the compliance with the AIEP and the issued permit, heads of expeditions have to hand in a post-visit report describing the actual course of the trip.

Since the beginning of tourism to the Antarctic, which is mainly concentrated on the Antarctic Peninsula, visitor numbers have increased significantly and have more than quintupled between 1992 and 2016. This is the reason why additional internationally binding regulations on tourism became necessary. As early as 1994, the Parties to the Antarctic Treaty adopted a “code of conduct” (Guidance for Visitors to the Antarctic) for the protection of flora and fauna. It is binding for tour operators as well as for visitors to the Antarctic. In 2011, General Guidelines for Visitors to the Antarctic had been adopted and apply at all sites of Antarctica. Additionally, site-specific guidelines are in place for very popular and thus well-frequented landing sites.

3 What should you keep in mind when visiting the Antarctic?

Protect plants and wildlife

Antarctic communities are specifically adapted to the extreme ecological conditions. Therefore, they are only to a limited extent capable of reacting to changes to their environment, which makes them extremely vulnerable to disturbances.

Century-long commercial hunting of seals and whales has dramatically reduced populations of some species. While seal populations have managed to recover, whale species such as the blue whale or the fin whale continue to be threatened and have been placed under special protection.

Since the EP entered into force, disturbing, touching, catching, injuring or killing of penguins and other birds, of seals or whales in the Antarctic has been prohibited. Furthermore, all activities are prohibited that harm any plants and animals – be it noise, close approaches or damages caused by footsteps.

To keep preserving the continent’s uniqueness, plants, animals, or parts thereof must not be removed from the Antarctic. Foreign species, e.g. dogs, may not be introduced.

Watching is allowed – but keep your distance

Antarctic wildlife hardly fear people and barely display flight reflexes, as they are not familiar with land-based predators in the Antarctic. Thus, it appears tempting to approach wildlife for photographs since they seem to be trusting.

For average tourists, it is difficult to determine whether animals are scared or feel threatened. In order to avoid unnecessary stress for animals, you should always keep minimum distances. How do you recognise that animals feel threatened or disturbed? Seals, for example, lift their head; Antarctic terns and skuas send out a warning cry and attack; penguins and other birds display reflexes to attack or to flee.



It is absolutely necessary to keep sufficient distance to penguins and other Antarctic animals in order to avoid disturbing them.

They cry out, interrupt their breeding when disturbed over a longer time and even desert their young.

It is not easily possible to discern which reaction is due to a disturbance. Scientists have found that animals that have been disturbed feature higher heart rates, develop shorter sleep phases for recovery and even may manifest a weaker immune system.

The intensity of reactions depends on how close and how fast you approach the animal. Especially during breeding season between October and April, you should not approach bird colonies. During phases of moult, incubation and upbringing, animals are particularly sensitive to disturbances.

As a consequence of frequent visits and helicopter overflights, for example the population of the native colony of Adélie penguins at Cape Royds has decreased considerably. Elephant seal cows possibly interrupt lactation when disturbed. Should this happen several times during the first three postnatal weeks, the seal pups must migrate to the ocean underweight. Thus, they are not sufficiently ready for life.

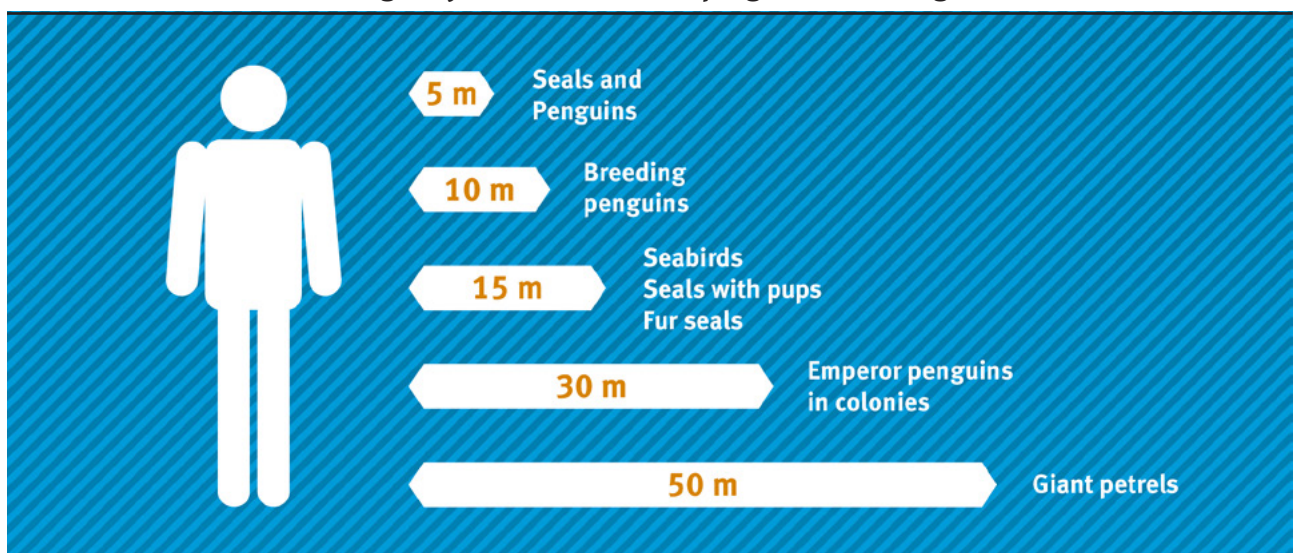
Keeping a sufficient distance to animals is also in your own interest. Seals – particularly fur seals – may, if they feel threatened, rapidly assail intruders and cause serious injuries. Therefore, retreat instantly at the first sign of behaviour change. In your own interest, you should keep the following in mind:

Behavioural studies on Adélie penguins showed that 68 percent of the animals rose from their nests when approached to a distance of 5 metres; after people had retreated, it took 50 seconds until penguins reclaimed their resting position. During this time, eggs cooled by 2.8 to 3.9° Celsius. Heart frequency increased from 82 beats/minute to 126 beats/minute. No change in behaviour occurred when a distance of 15 to 30 metres was kept. Heart beat frequencies also remained comparably low at 96 beats/minute.

- ▶ **Keep the recommended minimum distances to animals and retreat upon any sign of behaviour change**
- ▶ **Always "give way" to animals**
- ▶ **Never block escape between an animal and the water**
- ▶ **Remain at the edge of colonies**
- ▶ **Never circle animals**
- ▶ **Take pictures without using the flashlight**

Figure 1

The German Environment Agency recommends keeping the following minimum distances:



Source: German Environment Agency 2016

Avoid unnecessary noise

The solitude of the Antarctic inland ice and the apparently endless, deserted vastness make Antarctica one of the few places on earth where silence and the forces of nature can truly be experienced. Being able to experience this silence is a value in itself.

When using helicopters, airplanes or zodiacs, please be vigilant about animals at land or at sea in order to avoid disturbances due to noise or close approaches. Low overflights of animal colonies can panic animals and trigger mass escapes. Therefore, we kindly ask you:

- ▶ **Avoid unnecessary noise**
- ▶ **Please operate skidoos or zodiacs as quietly as possible, i.e. at low speed and at low rotational speed. Never use these means of transportation close to animals and their colonies**
- ▶ **When conducting overflights, comply with mandatory minimum flight altitudes (meaning 610 metres/2.000 feet above ground level when passing over penguin and other bird colonies)**

Preserve the vegetation

As a consequence of extreme climatic conditions and short vegetation periods, plants, algae, and lichens of Antarctica are particularly vulnerable to external influences. Slow vegetation growth rates lead to foot-

prints remaining visible for very long periods. Some lichens may grow by one to two centimetres only in the course of a century.

Do not step on or drive over lichens, moss, or grass cushions. Carefully select camp sites and sites for depots and do not cause damage to snow-free ground or plant cover. The nests of ground breeders as e.g. the Antarctic tern are very well camouflaged. Please be especially careful when choosing your path or camp sites.

If possible, put up your tent on snow- or ice-covered areas. If it is inevitable to pitch up your camp on ice-free areas, avoid permanent modifications to the surroundings of the site when pitching and anchoring your tent.

Ice-free parts of Antarctica are very arid, making them particularly susceptible to wildfire. Avoid open fires.

Keep the following in mind:

- ▶ **Stay on existing paths and trails**
- ▶ **Do not step on vegetation**
- ▶ **Possibly pitch up camps and depots on snow- or ice-covered grounds**
- ▶ **Take precautions against wildfire**



The Antarctic silence is unique. To navigate zodiacs slowly through icy waters is not only a unique experience for passengers but also helps to avoid noise.



Due to very slow vegetation growth rates damages caused by footsteps remain visible for very long periods: these footprints had been left some years ago.

Keep non-native plants and animals out of the Antarctic

Due to the geographic isolation of the continent, Antarctic wildlife is not familiar with land-based predators. For a long time, animals have thus been sheltered against predating species and newly introduced diseases. In the meantime, threats from outside have emerged, however: For example, the Infectious Bursal Disease virus (IBDV) has been detected among emperor penguin chicks; this virus weakens the immune system and is probably related to imported chicken products.

Against these kinds of threats, native plants and animals have not developed any defence mechanisms and strategies. This is the reason why non-native plants or animals may only be introduced into the Antarctic in accordance with a permit.

In the face of growing visitor numbers and human encroachment of previously unaffected stretches of land, the Antarctic is increasingly subject to the threat of newly introduced and invasive species. Non-native species often may find their way to the Antarctic inconspicuously and in various ways, either as seeds, spores, germs or bacteria.

Keep in mind: Traces of soil and seeds from your last hiking trip in other regions of the world can cling to your shoes, Velcro, tripods or hiking poles.

Even within Antarctica, there is a danger of introducing non-local organisms from one isolated ecosystem to another. This can endanger the numerous specialised and isolated habitats. Soil and plant particles or bird excrements can contain micro-organisms such as mites or hair worms, which may cling to your shoes. In the course of your journey within the Antarctic, you can potentially spread these seeds and soil particles over long distances. This may lead to a change in the species composition of previously isolated regions.

Therefore, please keep the following in mind:

- ▶ **Keep your shoes, your clothes, your luggage and your equipment clean of plants and traces of soil**
- ▶ **Do not introduce any animals or plants into the Antarctic**

Respect Historic Sites and Monuments

The Antarctic features numerous remains of explorations and various polar expeditions. In memory of the exploration history, they have been put under protection as Historic Sites and Monuments (HSMs).

Apart from artefacts left behind by the first explorers, testimonies of the period of economic exploitation as well as first research stations have been protected. Furthermore, memorials are reminiscent of deceased explorers, whalers, researchers, journalists and travellers.

Ice, snow, wind and extreme temperatures are affecting these historic sites. Considerable visitor numbers additionally compromise the original condition and the surroundings of some of these historic buildings. Particularly scuff, carelessness and vandalism (e.g. leaving graffiti on wood or stones) are causing damage. Help to preserve the original condition of HSMs!

Only enter huts that have been cleared for the public. Do not touch or remove parts of the interior or from the building. By behaving responsibly, you can help to ensure that these sites remain open to the public in the future. That means:

- ▶ **Do not modify the Historic Sites and Monuments nor their surroundings**
- ▶ **Regard admission restrictions (danger of collapse)**

Respect protected area

Certain areas in the Antarctic, both marine and land-based, have been put under special protection because of their ecological, scientific, historic or aesthetic value. These Antarctic Specially Protected Areas (ASPAs) serve, among others, to protect wildlife, plants and geological particularities against disturbance and to preserve the pristine conditions of wilderness areas. It is strictly prohibited to enter, traverse or fly over these areas, unless you have a permit to do so.

Furthermore, Antarctic Specially Managed Areas (ASMAs) have been established to facilitate an environmentally sustainable use by researchers and logistic operators of heavily frequented areas. Designated trails, access limitations as well as designated landing sites and flying corridors regulate human interference with nature. ASMAs can contain one or several ASPAs or HSMs.

Summing up, this means:

- ▶ **Get information ahead of time about the locations and boundaries of protected areas**
- ▶ **Do not enter any Antarctic Specially Protected Area unless you have the appropriate permit**
- ▶ **Respect the provisions applicable to Antarctic Specially Managed Areas**

Respect local research activities

For more than a century, research has been conducted in the Antarctic in fields such as astrophysics, biology, geology, glaciology, climatology, medicine, meteorology and oceanography. Globally unique conditions of the Antarctic environment are incentive for numerous countries to carry out research in the Antarctic with considerable logistic efforts.

Antarctica features the best air quality globally, thus allowing reliable atmospheric measurements devoid of direct anthropogenic impact. Furthermore, inland ice and glaciers of Antarctica are unique “archives” of historic climate events and can contribute to understand today’s climate changes.

In case you have arranged a visit to a research station, contact the respective station 72 to 24 hours prior to your planned visit for reconfirmation of the arranged date. The difficult research conditions in Antarctica may necessitate changes of schedules at short notice.

We kindly ask you:

- ▶ **Do not disturb or interfere with ongoing scientific work during your visit**
- ▶ **Look out for ground markers and labels in the area surrounding research stations**
- ▶ **Enter only rooms that have been assigned to you and respect the privacy of station personnel**
- ▶ **Do not touch, modify or destroy experimental setups or measuring devices**



Safety first

Your personal safety has priority over any kind of in-site activity be it ever so interesting. Be aware that options for external help in case of emergencies are very limited in the Antarctic.

Weather conditions can rapidly change. Fog, sudden gale-force winds, and the resemblance of the landscape can potentially impede orientation and thus the return to your group. Do not overestimate your physical abilities. If you are travelling in a group, plan your activities according to the physical condition of the weakest group member.

And do not forget: Even for healthy people in good physical condition, the adverse climatic conditions of Antarctica put an additional strain on the body. Under the influence of wind, the exceptionally low Antarctic temperatures are perceived to be even more extreme. “Wind chill” describes an effect that withdraws heat from the skin through evaporation chill.

Temperatures of -25° Celsius for example, which in calm wind conditions do not pose an immediate threat to humans, are perceived as -40° Celsius under the influence of winds at 35 kilometres/hour. Under these conditions, hypothermia and frostbite can occur within half an hour or less.

Apart from low temperatures, orientation problems pose another threat in the Antarctic. Some areas are still insufficiently mapped. Glaciers generally are honeycombed with often snow-covered crevasses. Poor visibility and a landscape hardly offering landmarks pose additional threats to your safety.

In snow-covered landscapes, a white-out effect can occur, which is also known in the high mountains: The diffuse reflection of sunlight under foggy, overcast or snow conditions on snow-covered surfaces leads to a distorted orientation where the horizon disappears completely. This means that the human eye can no longer differentiate between earth and sky, contours or shadows disappear altogether. Apart from orientation difficulties, this phenomenon may also lead to psychological strain – many people become anxious or frightened.

Therefore, exercise caution, do not overestimate your abilities and – if travelling in a group – stay together. That way, you avoid complex rescue operations.

Existing food depots and refuge huts may only be used in case of an emergency. If you need to remove equipment or food, notify the nearest research station and the authority in charge for the particular infrastructure as soon as the emergency has ended.



On Deception Island, remains of former research and whaling stations are to be found. Since research is still on-going during summer time, parts of the circular island cannot be accessed.



White-out effect: Earth and sky appear to merge, contours and shadows disappear. This effect is due to excessive light as a consequence of snow and diffuse reflection of sunlight.

If there is a danger that the Antarctic environment will suffer serious and long-term ecological harm as a result of an accident or emergency during your expedition, you are required to take quick and effective counter-measures. They need to be initiated directly after the emergency. In your own interest, please keep the following in mind:

- ▶ **Be aware of your physical abilities and those of the weakest member of the group**
- ▶ **Stay with your group**
- ▶ **Always plan with a safety margin (with regard to time, food, fuel, cold protection)**
- ▶ **Conduct yourself in a way that will make outside help unnecessary**
- ▶ **Be aware of crevasses on glaciers and snowfields**
- ▶ **Initiate immediately appropriate counter-measures in case of ecological damages**

Preserve the pristine conditions of the Antarctic

For a long time, there had been little or no traces of human activity in the Antarctic. Over the past years, this has changed. To help preserve Antarctica's natural conditions as much as possible, you are neither allowed to leave waste behind nor to modify the landscape or take stones, fossils, flotsam, animals or plant parts with you as "souvenirs".

The Antarctic climate – this means deep temperatures and low atmospheric humidity – causes even organic waste such as leftover food to decompose very slowly. Thus, waste is not only causing damage to the environment, but also spoils other travellers' experience of Antarctica.

Freshwater or saltwater lakes and glacial creeks are very sensitive ecosystems. Waste and wastewater can cause irrevocable damages to the hydro-chemistry, as natural decomposition processes are extremely slow even there. Help preserve the pristine conditions of the region and do not leave any waste behind neither on-shore nor at sea. If you come across waste, take it with you for correct disposal.

Please keep the following in mind:

- ▶ **Do not leave any waste behind**
- ▶ **Do not extract anything from the Antarctic, particularly do not take plants, animals, remains thereof or things like bones, seeds, flotsam etc. with you**
- ▶ **Leave stones, fossils, sand or soil in their place**
- ▶ **Do not pollute watercourses or standing water**

Useful internet links

Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, www.awi.de/en/

Antarctic and Southern Ocean Coalition, ASOC, www.asoc.org

Antarctic Environments Portal, www.environments.aq

Antarctic Treaty Secretariat, ATS, www.ats.aq

- ▶ List of ASMAs, www.ats.aq/devPH/apa/ep_protected_search.aspx?type=3&lang=e
- ▶ List of ASPAs, www.ats.aq/devPH/apa/ep_protected_search.aspx?type=2&lang=e
- ▶ List of HSMs, www.ats.aq/devPH/apa/ep_protected_search.aspx?type=1&lang=e
- ▶ List of specific Site Guidelines for Visitors, www.ats.aq/e/ats_other_siteguidelines.htm
- ▶ General Guidelines for visitors to the Antarctic, www.ats.aq/documents/recatt/Att483_e.pdf

Commission for the Conservation of Antarctic Marine Living Resources, CCAMLR, www.ccamlr.org

Council of Managers of National Programs, COMNAP, www.comnap.aq

Federal Agency for Nature Conservation, www.bfn.de/0310_antarktis+M52087573ab0.html

Federal Institute for Geosciences and Natural Resources, www.bgr.bund.de/EN/Themen/Polarforschung/polarforschung_inhalt_en.html

German Aerospace Centre, www.dlr.de/eoc/en/desktopdefault.aspx/tabid-9472/16238_read-40703/

German Environment Agency, www.umweltbundesamt.de/en/antarctic

International Association of Antarctica Tour Operators, IAATO, www.iaato.org

Ministry of Foreign Affairs, www.auswaertiges-amt.de/EN/Aussenpolitik/Themen/InternatRecht/Einzelfragen/Antarktis/Antarktis.html

Scientific Committee for Antarctic Research, www.scar.org

Abbreviations

AIEP Act Implementing the Protocol of Environmental Protection to the Antarctic Treaty

ASMA Antarctic Specially Managed Area

ASPA Antarctic Specially Protected Area

ATCM Antarctic Treaty Consultative Meeting



AWI Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research

HSM Historic Site and Monument

UBA Umweltbundesamt (German Environment Agency)



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